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Kovio leads the future of bar code technology

BY JANET RAE-DUPREE

The semiconductor industry from which Silicon Valley got its name consumes resources like there's no tomorrow. To make a microprocessor, layer upon layer of precious metals and other materials must be built up and then painstakingly etched away, leaving only minute fragments behind.

But the startup being honored with this year's Special Judge's Award has figured out how to turn the process on its head by literally printing in place only those materials that are actually needed.

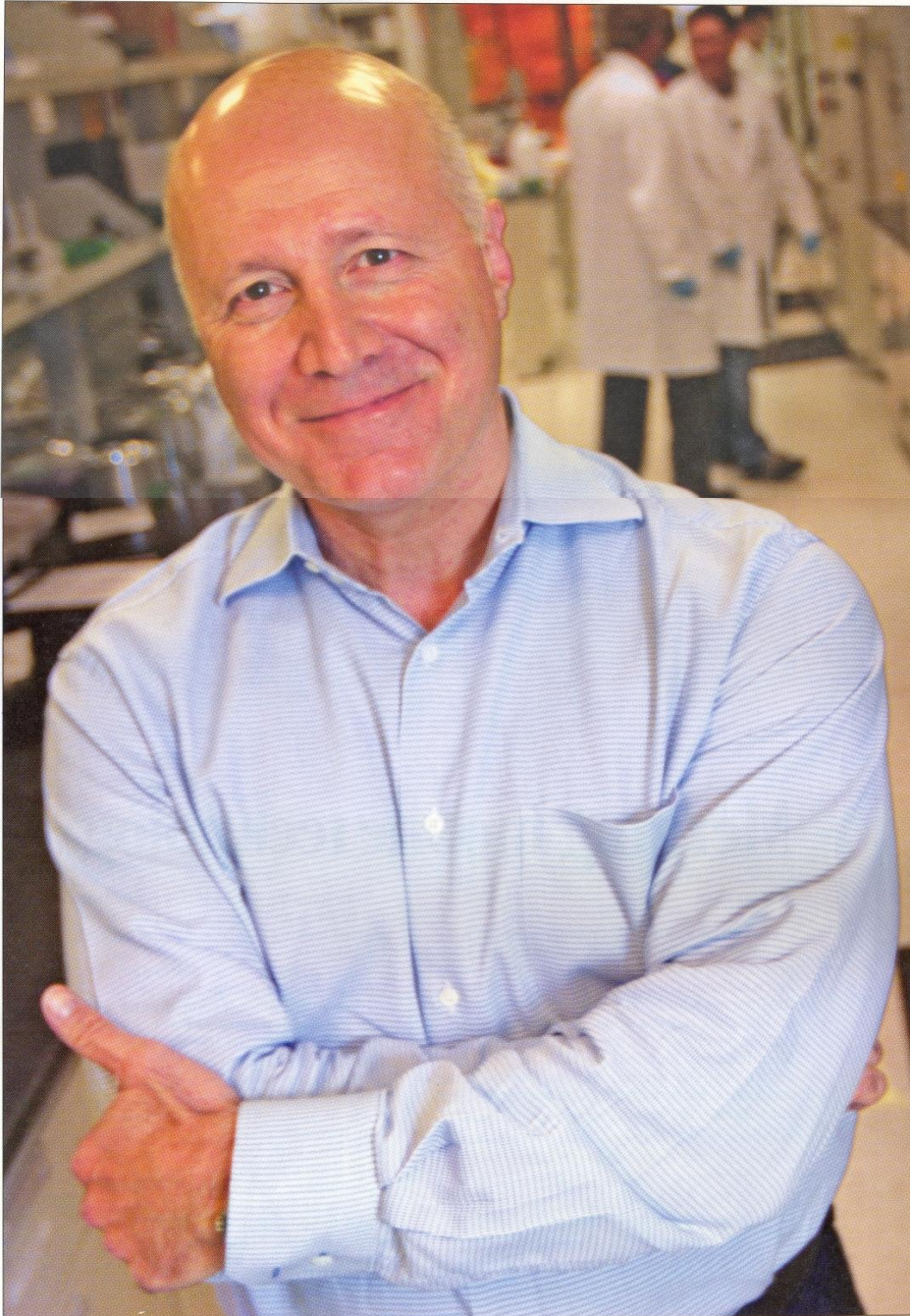
JUDGES' AWARD

While Kovio Inc. won't give the likes of Intel Corp. a run for its money, it is at the forefront of a brand-new category of gadget referred to simply as printed electronics. The company, which recently moved from Sunnyvale to a 95,000-square-foot production facility in Milpitas, announced the technical breakthrough of the first functioning printed transistor in the fall of 2007. Now, just a year later, it has unveiled its first commercial product: a radio frequency identification, or RFID, tag printed with silicon ink.

Referred to as printed integrated circuits, or PICs, the tiny high-frequency radio tags represent the next generation of printed bar codes, Kovio CEO Amir Mashkooi said. They can do everything from replacing the magnetic strip in a subway transit card to acting as the brains behind an interactive map of a zoo, both of which are applications planned by Kovio's first two clients.

"The item level market that we're going at will be a \$5 billion opportunity by 2015 based on a three-cent tag. That's 160 billion units," Mashkooi said. "That may seem like a lot, but there are 10 trillion new bar codes printed every year. So we're only looking at a 1.5 percent penetration into the bar code space. If you think about how large an opportunity this thing can be, it's pretty damned awesome."

Because the average Kovio integrated circuit has only about 1,000 transistors, it can't do the high-performance computing of an Intel or an Advanced



VICKI THOMPSON

BAR CODE BONANZA: Kovio chief executive officer Amir Mashkooi says 10 trillion new bar codes are printed every year. Mashkooi would like to capture 1.5 percent of that market, which he predicts to be a \$5 billion opportunity by 2015.

AT-A-GLANCE

KOVIO INC.

CEO: Amir Mashkooi

Founded: January 2007

Web site: www.kovio.com

Micro Devices Inc. chip packed with millions of the minuscule components. But the new RFID tags will be able to hold small amounts of data and transmit that information to a mobile-phone-based receiver.

"Item-level tagging is going to be the biggest market for RFID, and Kovio's game-changing technology is bringing RFID to the price point required for item-level adoption much sooner than anyone could have expected," said Raghu Das, CEO of analyst firm IDTechEx.

Kovio board member and venture capital investor Rob Chandra echoes that sentiment.

"Affordability is the No.1 requirement for RFID to displace the bar code for item-level intelligence," he said.

Chandra's firm, Bessemer Venture Partners, was an early investor in Kovio. "With Kovio's printed silicon platform, we are now ready to

truly extend RFID to where it has the large impact—the consumer."

The RFID segment of the new industry is expected to grow so explosively that analyst firm Research and Markets in Ireland earlier this year began tracking industry statistics.